

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. A semiconductor apparatus for storing a key and data, comprising:
~~first to N-th N (N is a natural number equal to or greater than two) N~~ storage sections (where N is an integer greater than one) having ~~first to N-th N~~ storage capacities, respectively, each of the N storage sections:
~~storing an externally input key or data at a received address in key and data writing; and~~
when a key and data are stored at a received address, outputting the key and data; and
when a key ~~or and~~ data ~~is are~~ not stored at ~~[[a]] the~~ received address, outputting ~~a first an empty~~ signal indicating that a key or data is not stored at the ~~received address, in key and data reading;~~
~~first to N-th N~~ comparison sections, each of the comparison sections corresponding to a respective one of the N storage sections and:
selectively comparing the externally input an externally-input key with a key[[s]] output from the respective one of the first to N-th N storage sections; and
when the ~~externally input externally-input~~ key matches the key[[s]] output from the respective one of the first to N-th N storage sections, outputting a ~~second match~~ signal indicating that the ~~externally input key matches the keys output from the first to N-th storage sections~~ and externally outputting the data that was output by the respective one of the N storage sections; and
when the ~~first to N-th~~ respective one of the N storage sections outputs the ~~first empty~~ signal[[s]], outputting a ~~third an available~~ signal indicating that the ~~first to N-th~~

~~storage sections output the first signals, in key and data writing into the first to N-th storage sections; and~~

~~_____ comparing the externally input key with keys output from the first to N-th storage sections; and~~

~~_____ when the externally input key matches the keys output from the first to N-th N storage sections, externally outputting data output from a storage section which outputs the key that matches the externally input key, among the first to N-th storage sections, in key and data reading from the first to N-th storage sections;~~

a first calculation section performing a first calculation which associates the ~~externally input~~ externally-input key with a first address in many-to-one correspondence;

a second calculation section performing a second calculation which associates the first address with a second address in one-to-one correspondence;

a first processing section operating when a ~~key and data are~~ is written, the first processing section:

sending the first address to the ~~first to N-th~~ N storage sections; and

when the ~~second~~ match signal is received from one of the ~~M-th (M is a natural number equal to or less than N)~~ N comparison sections, storing the ~~externally input~~ externally-input data at the first address in the ~~M-th~~ one of the N storage sections that corresponds to the one of the N comparison sections;

when the ~~second~~ match signal is not received from any of the ~~first to N-th~~ N comparison sections and the ~~third~~ available signal is received from one or more of the ~~first to N-th~~ N comparison sections, storing the ~~externally input~~ externally-input key and data at the first address in the first storage section obtained when a ~~storage section or ones of the N~~ storage sections that are outputting the first empty signal ~~among the first to N-th storage sections~~ are arranged in a first order;

when the ~~second~~ match signal is not received from any of the ~~first to N-th~~ N comparison sections and the ~~third~~ available signal is not received from any of the ~~first to N-th~~ N comparison sections, sending the second address to the ~~first to N-th~~ N storage sections;

when the second address has been sent to the N storage sections and the ~~second~~ match signal is received from one of the L-th (L is a natural number equal to or less than N) N comparison sections, storing the ~~externally input~~ externally-input data at the second address in the L-th one of the N storage sections that corresponds to the one of the N comparison sections; and

when the second address has been sent to the N storage sections, the ~~second~~ match signal is not received from any of the ~~first to N-th~~ N comparison sections, and the ~~third~~ available signal is received from one or more of the ~~first to N-th~~ N comparison sections, storing the ~~externally input~~ externally-input key and data at the second address in the first storage section obtained when ~~a storage section or ones of the N storage sections that are outputting the first empty signal among the first to N-th storage sections~~ are arranged in a second order; and

a second processing section operating when data is read, the second processing section:

sending the first address to the ~~first to N-th~~ N storage sections; and

when the second signal is not received from any of the ~~first to N-th~~ N comparison sections, sending the second address to the ~~first to N-th~~ N storage sections.